United States Department of the Interior

FISH AND WILDLIFE SERVICE
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Service Consultation Code: 2014-I-0071
Date Received: October 24, 2013
Applicant: EPA
Project: Statewide Dissolved Oxygen and Tidal Peace River Nutrient Revisions

Dear Ms. Benante:

In this correspondence, the U.S. Fish and Wildlife Service (Service) is responding to your request for concurrence on the findings presented in the document entitled "Biological Evaluation for the EPA's Approval of Dissolved Oxygen and Nutrient Related Revisions to Florida's 62-302 and 62-303 Rules, September 2013" prepared by the United States Environmental Protection Agency (EPA). The biological evaluation (BE) assesses the effects of revised dissolved oxygen (DO) criteria, as well as nutrient provisions which include site-specific criteria for the Tidal Peace River, on federally threatened and endangered species. The EPA has determined the revisions under review will have no effect on or are not likely to adversely affect any federally listed species or critical habitats.

Background

The Florida Department of Environmental Protection (DEP) held a series of public meetings in 2011 and 2012 prior to adoption of the revised criteria. Initial concerns regarding the suitability of the revised DO criteria for the protection of the threatened Gulf sturgeon (*Acipenser oxyrinchus desotoi*) and the endangered oval pigtoe mussel (*Pleurobema pyriforme*) were voiced by the Service at that time. In response, a series of meetings were held between the Service, DEP, and EPA in the fall and summer of 2012 to discuss potential impacts to the Gulf sturgeon and oval pigtoe mussel. As a result of this interagency coordination, provisions to ensure protection of the Gulf sturgeon and oval pigtoe mussel were developed and incorporated into the revised criteria. A description of the provisions is provided in the summary of the revised criteria.

Federal action

On July 16, 2013, the DEP submitted new and revised water quality criteria in Chapters 62-302 and 62-303 of the Florida Administrative Code (FAC) to the EPA to fulfill the requirements of section 303(c) of the Clean Water Act (CWA). EPA approved those criteria related to DO and nutrients on September 9, 2013. On October 24, 2013, a letter from the EPA dated October 18, 2013, was received by the Service's South Florida Ecological Services Office (SFESO) requesting concurrence on the aforementioned BE.

Action agency determination

The BE completed by EPA resulted in determinations that the revised water quality criteria will have no effect on or are not likely to adversely affect the endangered Florida salt marsh vole (*Microtus pennsylvanicus dukecampbelli*), the endangered West Indian manatee (*Trichecus manatus*) or its critical habitat, the endangered Everglade snail kite (*Rostrhamus sociabilis plumbeus*) or its critical habitat, the threatened piping plover (*Charadrius melodus*) or its critical habitat, the candidate red knot (*Calidris canutus*), the threatened roseate tern (*Sterna dougalli dougalli*), the endangered wood stork (*Mycteria americana*), the threatened American crocodile (*Crocodylus acutus*) or its critical habitat, the threatened Atlantic salt marsh snake (*Nerodia clarkii taeniata*), the threatened Gulf sturgeon (*Acipenser oxyrinchus desotoi*), the threatened Okaloosa darter (*Etheostoma okaloosae*), the threatened Chipola slabshell mussel (*Elliptio chipolaensis*) or its critical habitat, the endangered fat three-ridge mussel (*Amblema neislerii*) or its critical habitat, the endangered Gulf moccasinshell mussel (*Medionidus penicillatus*) or its critical habitat, the endangered Ochlockonee moccasinshell mussel (*Medionidus simpsonianus*) or its critical habitat, the endangered oval pigtoe mussel (*Pleurobema pyriforme*) or its critical habitat, the threatened purple bankclimber mussel (*Elliptoideus sloatianus*) or its critical habitat, the endangered shinyrayed pocketbook mussel (*Lampsilis subangulata*) or its critical habitat, the endangered round ebonyshell mussel (*Fusconaia rotulata*), the threatened narrow pigtoe mussel (*Fusconaia escambia*), the threatened fuzzy pigtoe mussel (*Pleurobema strodeanum*), the endangered Choctaw bean mussel (*Villosa choctawensis*), the endangered Southern kidneyshell mussel (*Ptychobranchus jonesi*), the threatened Southern sandshell mussel (*Hamiota australis*), and the threatened tapered pigtoe mussel (*Fusconaia burkei*). In an email dated January 21, 2014, EPA provided an additional determination that the revisions under review are not likely to adversely affect the endangered Florida bonneted bat (*Eumops floridanus*).

Summary of revised criteria

Revised provisions are described in 62-302.500 and 62-302.533 of the FAC for determining and adopting alternative DO criteria in situations where natural background conditions cause deviations from the regionalized DO criteria values. Adoption of alternative DO criteria would require EPA approval and would be subject to additional consultation with the Service. EPA has determined that these revisions are not likely to adversely affect any federally listed species or their critical habitat.

Additional revisions to 62-302.533 and 62-303.420 allow for the protection of ambient DO levels that are higher than the applicable criteria. A statistical test is described for determining if a waterbody is exhibiting a statistically significant decreasing trend in DO level and/or an increasing trend in daily DO fluctuations. Such a trend would then justify placement of the waterbody on the planning and/or verified lists for DO impairment, even if the DO of the waterbody meets the applicable criteria. EPA has determined that these revisions are not likely to adversely affect any federally listed species or their critical habitat.

Newly adopted freshwater criteria for Class I, Class III predominantly freshwaters, and Class III-limited predominantly freshwaters are outlined in 62-302.533. The new criteria stipulate that no more than 10 percent of the daily average percent DO saturation values shall be below the following thresholds: 67 percent in the Panhandle West bioregion, 38 percent in the Peninsula and Everglades bioregions, or 34 percent in the Northeast and Big Bend bioregions (Figure 1). The DO concentrations, in mg/L, corresponding to the percent saturation values over a range of temperatures, are displayed in Table 1. The criteria were established based on the relationship between balanced biological communities (quantified using the DEP Stream Condition Index [SCI] macroinvertebrate tool) and percent DO saturation.

The freshwater criteria in 62-302.533(3)(c) also stipulate that, in portions of the Suwannee, Withlacoochee, and Sante Fe Rivers utilized by the Gulf sturgeon (Table 2), and in portions of the Santa Fe and New Rivers utilized by the oval pigtoe mussel (Table 3), "DO levels shall not be lowered below the baseline distribution such that there is 90 percent confidence that more than 50 percent of measurements are below the median of the baseline distribution or more than 10 percent of the daily average values are below the 10^{th} percentile of the baseline distribution for the applicable waterbody." When assessing these waters in the future, compliance with both the 10^{th} percentile and median DO values will be evaluated using a binomial hypothesis test at the 80 percent and 90 percent confidence levels necessary to place a water segment on the planning list and verified lists, respectively, for TMDL development (DEP 2013). EPA has determined these revisions are not likely to adversely affect any federally listed species or their critical habitat.

Newly adopted criteria for Class II, Class III predominantly marine waters, and Class III-limited predominantly marine waters are outlined in 62-302.533. The new criteria stipulate that daily average DO percent saturation shall not be below 42 percent in more than 10 percent of the values, 7-day average DO percent saturation shall not be below 51 percent more than once in any 12 week period, and 30-day average DO percent saturation shall not be below 56 percent more than once per year. The marine criteria were established based on the EPA's Virginian Province approach. This method utilizes acute and chronic laboratory dose-response data for Florida-specific marine species to derive suitable DO levels. EPA has determined these revisions are not likely to adversely affect any federally listed species or their critical habitat.

Estuary-specific nutrient criteria for the Tidal Peace River are outlined in 62-302.532. Annual arithmetic means for total phosphorus (0.50 mg/L), total nitrogen (1.08 mg/L), and chlorophyll *a* (12.6 µg/L) are not to be exceeded in the Tidal Peace River more than once in a 3-year period.

The criteria were developed using a reference-based approach that linked periods when seagrass coverage was stable or increasing to chlorophyll *a*, TN, and TP. This methodology was employed during the criteria development for other sections of the Charlotte Harbor/Estero Bay estuary for which consultation has been completed. EPA has determined adoption of the Tidal Peace River nutrient criteria is not likely to adversely affect any federally listed species or their critical habitat.

Additional language has been added to 62-303.353 stipulating that any estuary or open coastal water that does not currently have a numeric interpretation of the narrative nutrient criteria will be added to the planning list for nutrient impairment if the annual geometric mean chlorophyll *a* value for any year is greater than 11 µg/L. The chlorophyll *a* benchmark in the rule language had been established previously. The addition to 62-303.353 serves to clarify when the chlorophyll *a* benchmark applies in light of the recent site-specific nutrient criteria adoptions. EPA has determined this revision to 62-303.353 will have no effect on any federally listed species or their critical habitat.

Species-specific analysis

Florida salt marsh vole

The Florida salt marsh vole is known only from one site at Waccasassa Bay in Levy County, Florida, and appears to exist in low numbers with a very restricted range. It is found at only one site in a transitional high salt marsh zone. It appears to be restricted to areas near the edge of patches of black rush (*Juncus roemerianus*), and in patches of seashore saltgrass (*Distichlis spicata*). Because the Florida salt marsh vole forages on vegetation that is not particularly sensitive to DO levels and does not respire underwater, the Service concurs with EPA's determination that the implementation of the revised DO criteria is not likely to adversely affect the Florida salt marsh vole.

The Florida salt marsh vole is not in the action area for the Tidal Peace River nutrient criteria.

West Indian manatee and its critical habitat

The West Indian manatee and its critical habitat occur in inland and coastal waters that will be subject to the DO revisions and the Tidal Peace River nutrient criteria. Direct effects to the manatee from the DO revisions are not expected to occur as manatees do not respire underwater. Additionally, secondary impacts to the manatee's forage resources are also not expected as aquatic vegetation is not believed to be particularly sensitive to DO levels. The DO criteria were established based on macroinvertebrate responses, which are considered to be more sensitive to DO levels than vegetation. The Service concurs with EPA's determination that the adoption of the revised DO criteria is not likely to adversely affect the West Indian manatee or its critical habitat.

The Tidal Peace River nutrient criteria were developed for the protection and restoration of seagrass, which should benefit the manatee. The Service concurs with EPA's determination that the Tidal Peace River nutrient criteria are not likely to adversely affect the West Indian manatee or its critical habitat.

Everglade snail kite and its critical habitat

The Everglade snail kite forages in freshwater habitats, some of which will be influenced by the DO criteria under review. A large proportion of the snail kite's critical habitat falls within the Everglades Protection Area, which has site-specific alternative DO criteria not currently under review. While the snail kite is not directly influenced by DO, the habitat of its primary prey (the Florida apple snail [*Pomacea paludosa*]) and other exotic apple snails in the Ampullariidae family will be influenced. Ampullariidae snails are not considered to be particularly sensitive to low DO levels as they possess both gills and a lung, with a siphon-like structure used to breathe atmospheric oxygen. Because the DO criteria were developed using data from sensitive macroinvertebrates with no ability to breathe atmospheric oxygen, implementation of the revised criteria should not be detrimental to apple snails. The Service concurs with EPA's determination that revised DO criteria are not likely to adversely affect the Everglade snail kite or its critical habitat.

The Everglade snail kite does not occur in the action area influenced by the Tidal Peace River nutrient criteria.

Piping plover and its critical habitat

The piping plover can be found wintering in Florida on a variety of coastal features including beaches, tidal flats, spoil islands, and in and around inlets and passes. Multiple critical habitat units are found throughout Florida on both the Atlantic and Gulf coasts. Piping plovers are expected to be foraging primarily on invertebrates in systems that may be influenced by the marine DO criteria. The DO requirements of sensitive marine species were considered during the development of the marine DO criteria. Implementation of the criteria should not be detrimental to the forage base of the piping plover. The Service concurs with EPA's determination that revised marine DO criteria are not likely to adversely affect the piping plover or its critical habitat.

While the piping plover's critical habitat units are located on ocean beaches, they are in close proximity to several estuarine systems that have recently-adopted nutrient criteria that are not currently under review. The Tidal Peace River is not directly connected to the piping plover's critical habitat. The influence of revised nutrient criteria in the Tidal Peace River on the piping plover or its critical habitat would be negligible considering the estuarine systems adjacent to piping plover habitat have recently adopted site-specific nutrient criteria. Thus, the Service concurs with EPA's determination that implementation of the nutrient criteria in the Tidal Peace River is not likely to adversely affect the piping plover or its critical habitat.

Red knot

Small populations of the candidate red knot overwinter on sandy beach and estuarine systems in Florida, including: salt marshes, tidal mudflats, mangroves, and brackish lagoons. Wintering populations in Florida forage on bivalves, gastropods, and crustaceans. Because the marine DO criteria were developed using data from sensitive marine species, it is not anticipated the revised criteria will have a negative impact on the forage base of the red knot; therefore, the Service concurs with EPA's determination that implementation of the marine DO criteria is not likely to adversely affect the red knot.

Implementation of the Tidal Peace River nutrient criteria should not impact the forage base of the red knot; therefore, the Service concurs with EPA's determination that implementation of the Tidal Peace River nutrient criteria is not likely to adversely affect the red knot.

Roseate tern

A breeding population of the roseate tern is known to occur in the Florida Keys. The forage base for this population is primarily small, schooling marine fish. Because the marine DO criteria were developed using data from sensitive marine species, it is not anticipated the revised criteria will have a negative impact on the forage base of the roseate tern; therefore, the Service concurs with EPA's determination that implementation of the marine DO criteria is not likely to adversely affect the red knot.

The roseate tern is not expected to occur in the action area for the Tidal Peace River nutrient criteria.

Wood stork

The wood stork forages in waterbodies that are covered by the freshwater and marine DO criteria under review, as well as waterbodies in the Everglades Protection Area that are not covered by the revised DO criteria. The primary prey of the wood stork are small forage fish, but other aquatic species, including amphibians and invertebrates, are occasionally consumed. Because the revised criteria were developed to protect sensitive macroinvertebrates and sensitive marine species, the prey base of the wood stork is not expected to be adversely impacted. Additionally, many of the small forage fish wood storks prey upon are not considered to be particularly sensitive to low DOs. Wood storks can regularly be observed foraging on fish in eutrophic canal systems, most likely under hypoxic conditions. The Service concurs with EPA's determination that implementation of the revised DO criteria is not likely to adversely affect the wood stork.

The Tidal Peace River nutrient criteria were developed for the protection and restoration of seagrass, which should benefit fish and other organisms upon which the wood stork preys. Thus, the Service concurs with EPA's determination that the Tidal Peace River nutrient criteria are not likely to adversely affect the wood stork.

American crocodile and its critical habitat

The American crocodile occurs primarily in estuarine systems in South Florida, though it may occur farther inland in fresher waters during the non-nesting season; therefore, the freshwater and marine DO criteria may influence crocodile habitat. Critical habitat for the American crocodile begins on the east coast of Florida near Turkey Point in Biscayne Bay and extends southward into Florida Bay and the upper Florida Keys. The crocodile forages on a variety of aquatic and terrestrial species. Because the revised criteria were developed to protect sensitive macroinvertebrates and sensitive marine species, the prey base of the crocodile is not expected to be adversely impacted. The Service concurs with EPA's determination that implementation of the revised DO criteria is not likely to adversely affect the American crocodile or its critical habitat.

The American crocodile may occur in or near the area designated as the Tidal Peace River. The nutrient criteria for the Tidal Peace River were developed for the protection of seagrass, which should not adversely impact American crocodile habitat. The Service concurs with EPA's determination that implementation of the Tidal Peace River nutrient criteria is not likely to adversely affect the American crocodile or its critical habitat.

Florida bonneted bat

The Florida bonneted bat may forage on emergent invertebrates over freshwater systems subject to the revised DO criteria. Because the revised criteria were developed to protect sensitive macroinvertebrates, the prey base of the Florida bonneted bat is not expected to be adversely impacted. The Service concurs with EPA's determination that implementation of the revised DO criteria is not likely to adversely affect the Florida bonneted bat.

The Florida bonneted bat may occur on the terrestrial landscape adjacent to the Tidal Peace River. It is unknown if the bat forages on organisms from estuarine/marine aquatic systems. EPA did not make an effect determination for the Florida bonneted bat for the Tidal Peace River nutrient criteria. Because the Tidal Peace River nutrient criteria is based on a sensitive ecological indicator from a reference period, the Service believes implementation of the criteria is not likely to adversely affect the Florida bonneted bat. This letter can be used as concurrence for that conclusion.

Atlantic salt marsh snake

The Atlantic salt marsh snake occurs in coastal salt marshes and mangrove swamps and feeds primarily on small fish and frogs. Atlantic salt marsh snake habitat will be influenced by the marine DO criteria. Historical reports indicate that the Atlantic salt marsh snake occurred in Volusia, Brevard, and Indian River Counties. Currently, the salt marsh snake is believed to be limited to Volusia County. Because the marine DO criteria were developed for the protection of sensitive marine species, it is unlikely that the salt marsh snake's prey base will be impacted. The Service concurs with EPA's determination that implementation of the revised marine DO criteria is not likely to adversely affect the Atlantic salt marsh snake.

The Atlantic salt marsh snake does not occur in the action area for the Tidal Peace River.

Gulf sturgeon

The Gulf sturgeon critical habitat crosses three of the bioregions in Florida subject to the revised DO criteria (Figure 1). The proposed DO changes in the Panhandle West bioregion will be more protective for Gulf sturgeon than the previous DO standard. Changes in DO standards for portions of the Santa Fe, Suwannee, and Withlacoochee Rivers utilized by the Gulf sturgeon have been addressed through adoption of Site Specific Alternative Criteria (SSAC) in Table 2. Based on the above, the Service concurs with EPA's determination that implementation of the revised DO criteria is not likely to adversely affect the Gulf sturgeon or its critical habitat.

The Gulf sturgeon does not occur in the action area for the Tidal Peace River.

Freshwater mussels

The freshwater mussels, with the exception of the oval pigtoe, reside in the Panhandle West bioregion. The proposed DO changes in the Panhandle West bioregion will be more protective for the mussels than the previous DO standard. Changes in DO standards for the portions of the Santa Fe and New Rivers utilized by the oval pigtoe have been addressed through the adoption of an SSAC in Table 3. Based on the above, the Service concurs with EPA's determination that implementation of the revised DO criteria is not likely to adversely affect listed freshwater mussels or their critical habitat.

The listed freshwater mussels do not occur in the action area for the Tidal Peace River.

Okaloosa darter

The Okaloosa darter resides in the Panhandle West bioregion. The proposed DO changes in the Panhandle West bioregion will be more protective for the darter than the previous DO standard. The Service concurs with EPA's determination that implementation of the revised DO criteria is not likely to adversely affect the Okaloosa darter.

The Okaloosa darter does not occur in the action area for the Tidal Peace River.

Summary

Upon review of the BE, the Service concurs with EPA's determinations that the implementation of revised freshwater and marine DO criteria and the Tidal Peace River nutrient criteria is not likely to adversely affect any federally listed species. The newly adopted criteria have been scientifically determined and are based on ecologically sensitive endpoints.

The above comments are provided in accordance with the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*). This fulfills the requirements of section 7 of the Act and no further action is required. If modifications are made to the project, if additional information involving potential effects to listed species becomes available, if a new species is listed, or if designated critical habitat may be adversely affected by the project, reinitiation of consultation may be necessary.

Thank you for the opportunity to review this BE and for your cooperation in the effort to protect fish and wildlife resources. If you have any questions please contact Anthony Sowers at 772-469-4223.

Sincerely yours,

Craig Aubrey
for Larry Williams
State Supervisor

cc: electronic only
EPA, Atlanta, Georgia (Lauren Petter)
Service, Jacksonville, Florida (Erin Gawera)
Service, Panama City, Florida (Channing St. Aubin)

LITERATURE CITED

DEP. 2013. Technical Support Document: Derivation of Dissolved Oxygen Criteria to Protect Aquatic Life in Florida's Fresh and Marine Waters. March, 2013. Prepared by: Florida Department of Environmental Protection, Division of Environmental Assessment and Restoration

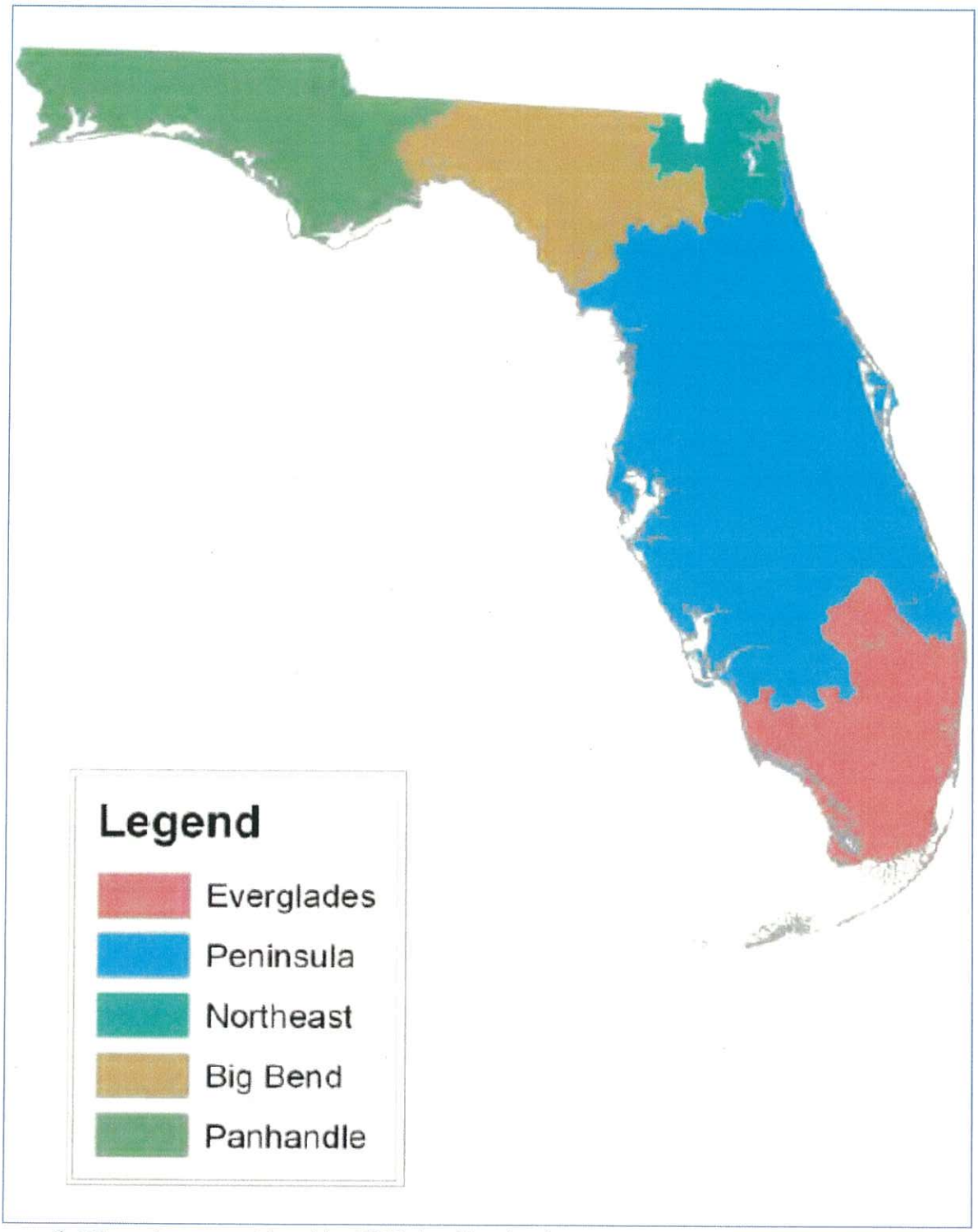

Figure 1. Bioregions considered by DEP for dissolved oxygen criteria development. (Image from Technical Support Document: Derivation of Dissolved Oxygen Criteria to Protect Aquatic Life in Florida's Fresh and Marine Waters. March 2013. Prepared by DEP.)

Temp, °C	NE + Pan East Criteria, 34% Sat	Peninsula Criteria, 38% Sat	Pan West Criteria, 67% Sat
8	4.0	4.5	7.9
10	3.8	4.3	7.6
12	3.7	4.1	7.2
14	3.5	3.9	6.9
16	3.4	3.8	6.6
18	3.2	3.6	6.3
20	3.1	3.5	6.1
22	3.0	3.3	5.9
24	2.9	3.2	5.6
26	2.8	3.1	5.4
28	2.7	3.0	5.2
30	2.6	2.9	5.1

Table 1. DO concentrations in each bioregion resulting from proposed DO saturation criteria. (Image from Technical Support Document: Derivation of Dissolved Oxygen Criteria to Protect Aquatic Life in Florida's Fresh and Marine Waters. March 2013. Prepared by DEP.)

River	Water Body ID	River km	DO % 10th percentile	DO mg/L 10th percentile	DO% 50th percentile	DO mg/L 50th percentile
Santa Fe	3605A	0 - 17.1 km	50.90	4.50	66.04	5.90
Santa Fe	3605 B	17.1 - 31.1 km	47.62	3.95	74.00	6.60
Santa Fe	3605 C	31.1 - 71.6 km	30.69	2.66	53.56	4.70
Suwannee	3422A	0 – 66.5 km	58.90	4.90	76.69	6.76
Suwannee	3422	66.5 – 105.8 km	60.25	5.00	74.55	6.55
Suwannee	3422 B	105.8 - 205.4 km	53.31	4.60	68.95	6.16
Suwannee	3341	205.4 – 261.6 km	41.07	3.55	66.40	5.70
Suwannee	3341A	261.6 – 288.1 km	65.45	5.49	78.16	6.60
Withlacoochee	3315	0 – 50.6 km	54.90	4.71	68.20	6.13

Table 2. DO concentrations for portions of the Santa Fe River, Suwannee River, and Withlacoochee River utilized by the Gulf sturgeon. (Amended from: Technical Support Document: Derivation of Dissolved Oxygen Criteria to Protect Aquatic Life in Florida's Fresh and Marine Waters. March 2013. Prepared by DEP.)

River	Water Body ID	River km	DO % 10th percentile	DO mg/L 10th percentile	DO% 50th percentile	DO mg/L 50th percentile
New	3506	0 - 31.5 km	52.48	4.60	67.65	6.29
Santa Fe	3605 D	71.6 – 87.7 km	59.51	5.00	72.95	6.50
Santa Fe	3605 E	87.7 – 104.5 km	46.06	4.00	69.16	6.20
Santa Fe	3605	104.5 – 118.7 km	37.14	3.17	69.30	6.23

Table 3. DO concentrations for portions of the New River and Santa Fe River utilized by the oval pigtoe mussel. (Amended from: Technical Support Document: Derivation of Dissolved Oxygen Criteria to Protect Aquatic Life in Florida's Fresh and Marine Waters. March 2013. Prepared by DEP.)